

PATENT SPECIFICATION

251,869

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PROVISIONAL SPECIFICATION.

Vaned Wheel Propeller for Light Naval Craft.

I, ANDREW YOUNG, 54, Culverden Road, Balham, London, S.W., of British nationality, do hereby declare the nature of this invention to be as follows:—

The invention consists of a means of propulsion fitted to a streamlined body (roughly aeroplane shape) either as a central wheel, or as twin wheels so that the machine can travel at speed over water surfaces.

Essentially, the wheel consists of 2 discs slightly coned, concave faces facing, the edges being only a few inches apart and carrying near their periphery several pairs of suitably designed cambered and streamlined blades with convex surfaces facing each other, and each inclined, the inner one inwards and the

outer one outwards, a few degrees to the tangent of "mean blade distance" circle.

The whole machine, wheel or wheels and blades, will be so designed that at the running speed, it will be supported by the blades on wheel periphery in such a position that the water surface is about coincident with inner blade circle.

It is hoped that this will give a bucket effect to the water when the wheel is running at speeds, whilst owing to centrifugal force, the water is thrown off and little or no resistance offered to the passage of the blades through the air during the remainder of the revolution of the wheel.

Dated the 2nd day of November, 1925.

ANDREW YOUNG.

COMPLETE SPECIFICATION.

Vaned Wheel Propeller for Light Naval Craft.

I, ANDREW YOUNG, 54, Culverden Road, Balham, London, S.W. 12, of British nationality, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates generally to an improved means of propulsion of bodies over water and is particularly applicable to such bodies having a streamline shape.

I am aware that it has previously been proposed to provide a wheel-like structure for propelling bodies over water having pairs of shutters radially disposed around the structure and mechanism whereby the said shutters move so that when they are out of the water they lie in planes substantially concentric with the structure and when in the water the shutters of each pair touch and are

inclined to one another. Further it has been proposed to provide movable planes at the end of radial arms adapted to rotate at high speed, the planes being so mounted that they do not enter the water, but contact with the surface thereof; movable radial blades being affixed to each plane if desired to provide additional means of propulsion. In other known types of propulsion wheels, blades are mounted circumferentially thereon, in spaced and parallel axial planes, the blades in one plane being inclined to those of the other plane.

It is also well known that aeroplanes as at present in use are capable of speeds greater than that of land vehicles on account of various speed limiting factors in the case of the latter, such as the springing of the body of the vehicle to absorb shocks, and difficulties encountered

[Price 1/-]

in transferring the power from the engine of the vehicle to the road surface through the intermediary of the road wheels. The speed limiting factors in the case of aeroplanes, however, are due to such considerations as the comparatively low propeller efficiency, the resisting effect both frictional and wave forming of, for example, the wings, struts or landing carriage.

The principal object of the present invention is to provide propulsion means for a body adapted to travel over water whereby the above mentioned speed limiting factors are either non existent or else are reduced to a minimum. A further object is to make use, in propelling a body over water, of the known fact that water is substantially incompressible and that air is readily compressed.

With the above objects in view, according to my invention, I provide a wheel-like member capable of rotation at high speed in a vertical plane and provided with a plurality of fixed and circumferentially spaced pairs of streamline vane-like members and wherein the two vane-like members of each said pairs are mutually inclined to each other and mutually spaced in a substantially radial direction. Preferably each of the vane-like members is cambered.

In order that my invention may be more clearly understood, and more readily carried into practice, reference is now made to the accompanying drawings, in which:—

Figure 1 is an elevational view of an above water craft embodying my invention.

Figure 2 is a part sectional front view thereof.

Figure 3 shows one of the wheel like propelling members with its outer disc removed, and

Figure 4 shows to an enlarged scale a small portion of the periphery of the wheel like member shown in Figure 3.

Referring to the accompanying drawings, I have applied my invention to the preferred shape of body 1 for the above water craft viz. streamline or "aeroplane" shape. The body 1 as shown in the drawings is fitted with two wheel like propelling members generally denoted by the reference numeral 2, mounted on a common driving shaft 3 capable of high speed and driven from a prime mover within the body 1. The prime mover is preferably an internal combustion engine as generally used in aeroplanes.

The wheel like members 2 comprise two circular discs 4 preferably made of sheet metal, spaced apart and each lying generally in spaced vertical planes. The

discs 4 are preferably slightly conical in shape with their concave surfaces facing. The said discs 4 are rivetted or otherwise secured to a spider 5 fixed to the shaft 3. The two co-operating discs 4 are provided near their periphery with an annular bridging ring 6 contacting with the outer radial edge of transverse pins 7 circumferentially spaced and connected at each end to one of the discs 4. Strengthening spokes 8 may be provided within the ring 6, connecting the pins 7 to the inner hub 5 of each member 2.

In the annular space between the outer edge of the ring 6 and the periphery of the discs 4 are arranged a plurality of pairs of blades or vanes bridging the space between the two discs 4 and spaced apart circumferentially on the discs 4. Each pair of blades or vanes comprises two members 9 and 10, both mutually spaced radially and mutually inclined to one another as shown in Figure 4.

The blades or vanes 9 and 10 are cambered and streamlined in shape and each inner vane 10 is of greater superficial area than the outer vane 9 for the purpose hereinafter explained.

When the body 1 is at rest, its under surface may be in contact with the water, the whole structure floating normally upon the water. When the wheel like members 2 are rotated and the body commences to move, the inner vanes 10 being of a comparatively large area will offer resistance to their passage through water and will therefore exercise a lifting effect on the whole machine until the water level is approximately tangential to the pitch circle of the said inner vanes. The forward motion is given to the body by the fact that a quantity of water, due to its comparative incompressibility, is momentarily and successively trapped within the open ended compartments formed by the vanes 9 and 10 and denoted by the reference numeral 11. The said water is trapped in each compartment 11 when the vane 9 is below and the vane 10 touching the water surface, but is immediately removed therefrom when the blades leave the water, due primarily to centrifugal action. During the remainder of the travel of the blades through the air medium, little resistance is offered owing to the small and streamlined shape of the blades 9 and 10 and to a large comparative compressibility of the air.

It will be understood that due to the large gyroscopic forces set up by the high speed rotation of each wheel like member it would be possible to design a machine having only a single central propelling member 2, but as already stated, in the

preferred form illustrated in the drawings, two such members 2 are provided.

5 The upper part of each member 2 may be fitted with a streamlined cover 12 which as shown in the drawings extends slightly below the shaft 3 of the wheel like members 2.

10 It must be understood that the actual shape of the body of the water craft does not constitute a part of my invention and with the propelling means therefore may be modified, the former quite appreciably, without departing from the spirit and scope of my invention.

15 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

20 1. Apparatus for propelling a body over water comprising a wheel-like member capable of rotation at high speeds in a vertical plane and provided with a plurality of fixed and circumferentially spaced pairs of streamline vane-like members and wherein the two vane-like members of each of said pairs are mutually inclined to each other and mutually spaced in a substantially radial direction.

2. Apparatus according to Claim 1 wherein each of the vane-like members is cambered and streamline in shape.

3. Apparatus according to Claims 1 or 2 wherein the inner vane-like member of each of said pairs has a greater superficial area than the outer vane-like member for the purpose set forth.

4. Apparatus according to Claim 1 wherein the wheel-like member comprises two substantially vertical side discs to which the said vane-like members are affixed.

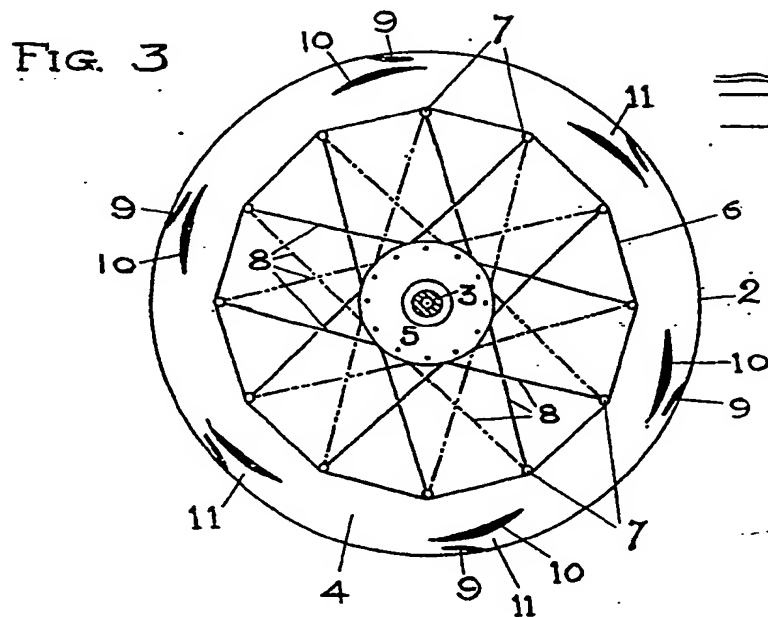
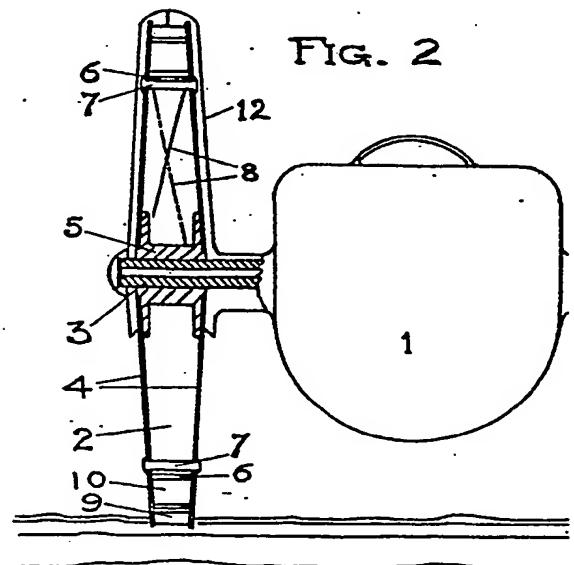
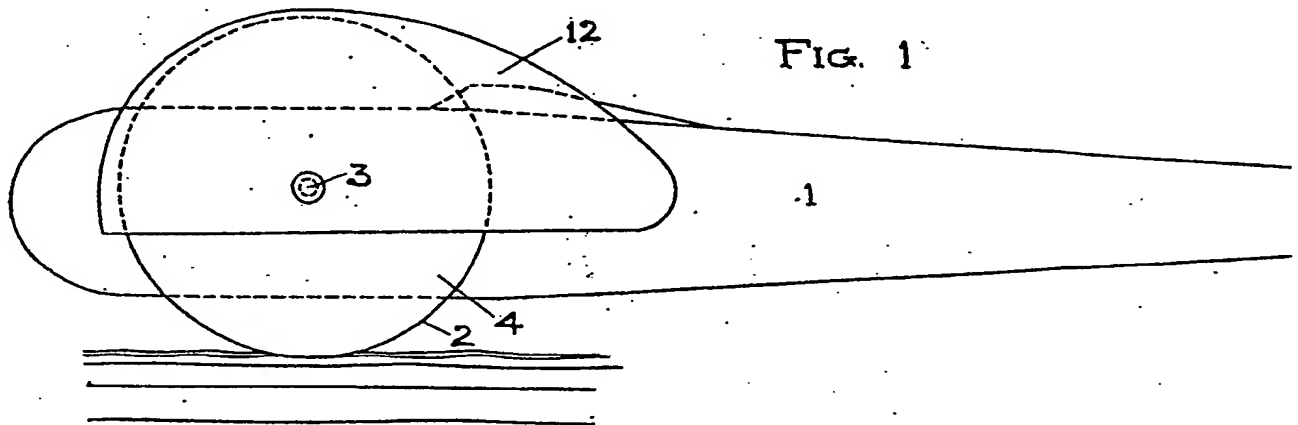
5. Apparatus according to Claim 3 wherein the two side discs are slightly conical in shape and are mounted in spaced parallel planes with their convex surfaces extending outwardly.

6. Apparatus for propelling a body over water substantially as herein described and illustrated in the accompanying drawings.

7. A body adapted to travel over water having means for its propulsion thereover substantially as described and illustrated in the accompanying drawings.

Dated the 19th day of March, 1926.

ANDREW YOUNG.



[This Drawing is a reproduction of the Original on a reduced scale.]

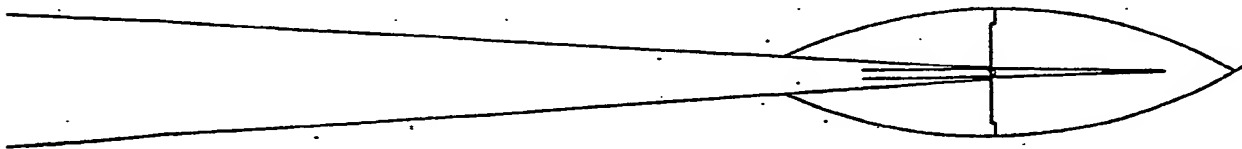


FIG. 2

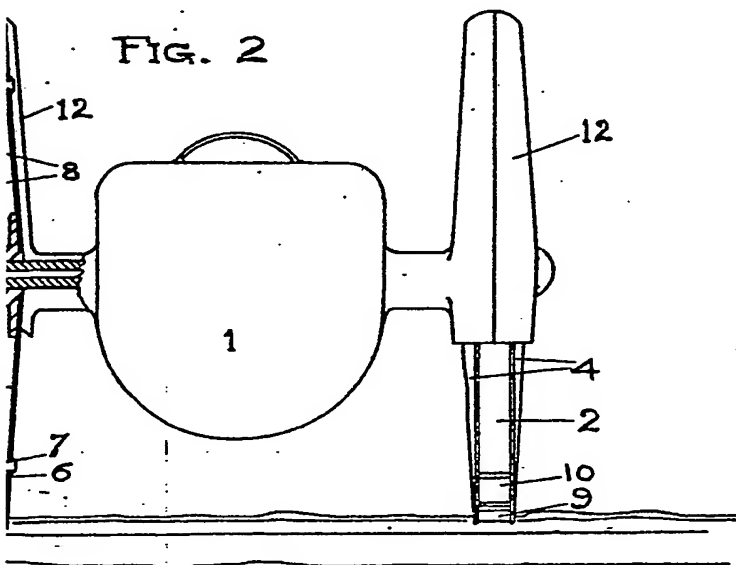
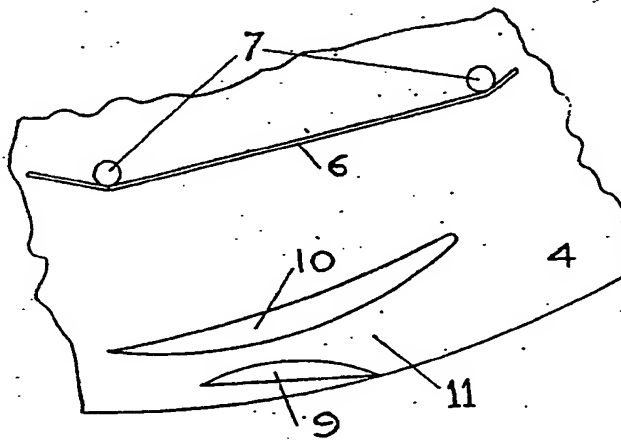


FIG. 4



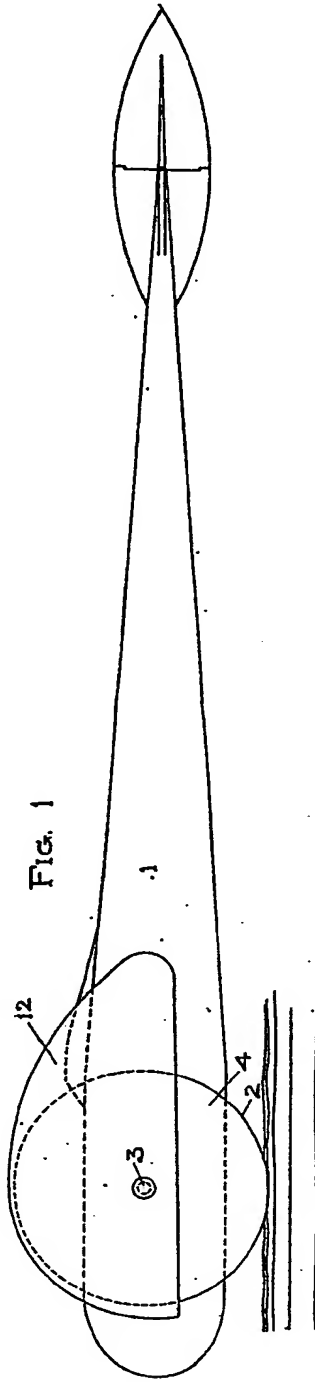


Fig. 1

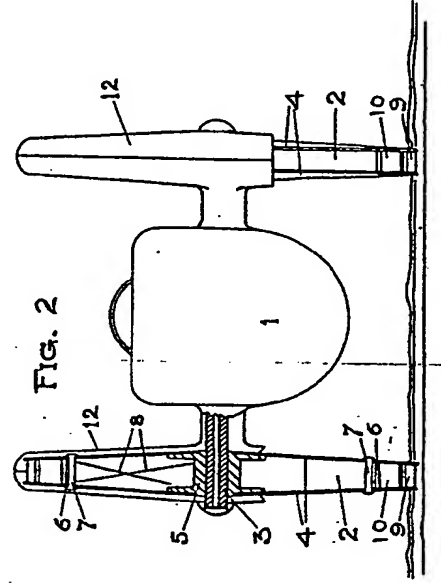


Fig. 2

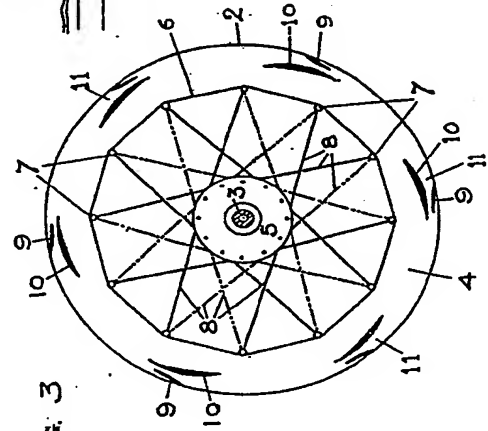


Fig. 3

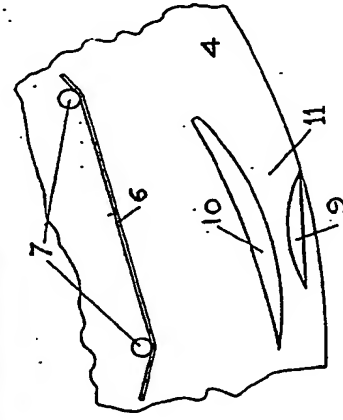


Fig. 4

[This Drawing is a reproduction of the Original on a reduced scale]